# Mathematische Zeitschrift

**Band 135 · 1973/74**

Herausgegeben von **T. tom Dieck**, Saarbrücken
**E. Heinz**, Göttingen
**A. Pfluger**, Zürich
**H. Salzmann**, Tübingen
**H. Wielandt**, Tübingen
**K. Zeller**, Tübingen

Wissenschaftlicher Beirat
B. Eckmann, Zürich · P. Gabriel, Bonn
H. Heyer, Tübingen · K. H. Hofmann, New Orleans
W. Klingenberg, Bonn · U. Krengel, Göttingen
W. Magnus, New York · G. Pickert, Gießen

Springer-Verlag
Berlin · Heidelberg · New York

The exclusive copyright for all languages and countries, including the right for photomechanical and any other reproductions, even in microform, is transferred to the publisher.

Alle Rechte, einschließlich das der Übersetzung in fremde Sprachen und das der fotomechanischen Wiedergabe oder einer sonstigen Vervielfältigung, auch in Mikroform, vorbehalten. Jedoch wird gewerblichen Unternehmen für den innerbetrieblichen Gebrauch nach Maßgabe des zwischen dem Börsenverein des Deutschen Buchhandels e.V. und dem Bundesverband der Deutschen Industrie abgeschlossenen Rahmenabkommens die Anfertigung einer fotomechanischen Vervielfältigung gestattet. Wenn für diese Zeitschrift kein Pauschalabkommen mit dem Verlag vereinbart worden ist, ist eine Wertmarke im Betrage von DM 0,40 pro Seite zu verwenden. *Der Verlag läßt diese Beträge den Autorenverbänden zufließen.*

Springer-Verlag / Berlin · Heidelberg · New York
Printer: Universitätsdruckerei H. Stürtz AG, Würzburg
Printed in Germany. – © by Springer-Verlag Berlin Heidelberg 1973/74

## Inhalt/Contents


Abels, H.: Specker-Kompaktifizierungen von lokal kompakten topologischen Gruppen . . . . . 325

Baeza, R.: Ein Teilformensatz für quadratische Formen in Charakteristik 2 . . . . 175

Djoković, D.Ž.: Level of a Field and the Number of Square Classes . . . . . 267

Gardiner, A.: Doubly Primitive Vertex Stabilisers in Graphs . . . . . 257

Grütter, A.: Wesentliche Selbstadjungiertheit eines Schrödinger-Operators . . . . . 289

Hackenbroch, W.: Eindeutigkeit des Darstellungsraumes von Vektorverbänden . . 285

Hale, M.P., Jr., Shult, E.E.: Equiangular Lines, the Graph Extension Theorem, and Transfer in Triply Transitive Groups . . . . . 111

Hansel, G.: Strict Uniformity in Ergodic Theory . . . . . 221

Held, R.P., Sjerve, D.K.: On the Homotopy Properties of Thom Complexes . . . . 315

Hildebrandt, S., Wente, H.C.: Variational Problems with Obstacles and a Volume Constraint . . . . . 55

Hofmann, K.H., Mislove, M., Stralka, A.: Dimension Raising Maps in Topological Algebra . . . . . 1

Howlett, R.B.: On the Degrees of Steinberg Characters of Chevalley Groups . . . . 125

Jenkins, J.A.: On a Problem Concerning Harmonic Measure . . . . . 279

Johnson, N.L., Kallaher, M.J.: Transitive Collineation Groups on Affine Planes . . 149

Johnson, N.L., Seydel, R.E.: A Class of Translation Planes of Order $3^6$ . . . . . 271

Kallaher, M.J., s. Johnson, N.L.: . . . . . 149

Kuhlmann, N.: Über holomorphe Abbildungen mit projektiven Fasern . . . . . 43

MacDonald, J.L.: Coherence and Embedding of Algebras . . . . . 185

Mislove, M., s. Hofmann, K.H., *et al.* . . . . . 1

Newell, M.L.: Splitting Theorems and Engel Groups . . . . . 37

Newman, M.F., Sichler, J.: Free Products of Hopf Groups . . . . . 69

Passi, I.B.S.: Polynomial Maps on Groups. II . . . . . 137

Passi, I.B.S., Stammbach, U.: A Filtration of Schur Multiplicator . . . . . 143

Reynolds, W.F.: Fields Related to Brauer Characters . . . . . 363

Rindler, H.: Ein Problem aus der Theorie der Gleichverteilung. II . . . . . 73

Scheffold, E.: Über den schwachen Kegel-Spektralradius und die nichtnegativen Spektralwerte positiver Operatoren . . . . . 93

Seydel, R.E., s. Johnson, N.L. . . . . 271

Shult, E.E., s. Hale, M.P., Jr. . . . . 111

Sichler, J., s. Newman, M.F. . . . . 69

Silcock, H.L.: Metanilpotent Groups Satisfying the Minimal Condition for Normal Subgroups . . . . . 165

Sjerve, D.K., s. Held, R.P. . . . . 315
Stammbach, U., Passi, I.B.S. . . . . 143
Stölting, R.: Über endliche Hjelmslev-Gruppen . . . . . 249
Stralka, A., s. Hofmann, K.H., *et al.* . . . . . 1
Wente, H.C., s. Hildebrandt, S. . . . . 55
Wilson, R.M.: Nonisomorphic Steiner Triple Systems . . . . . 303
Wolff, M.: Über das Randspektrum komplexer ordnungsbeschränkter Operatoren in Banachverbänden . . . . . 293

Indexed in Current Contents

# INSTRUCTIONS TO AUTHORS

## A. General

Papers submitted for publication may be written in English, French or German. A **summary** for Zentralblatt für Mathematik (including key words for classification) should be attached.

To speed up publication, authors will receive **only one set of proofs:** provisionally numbered page proofs. Authors are requested to **correct typographical errors only;** they will be charged for corrections involving changes, additions or deletions to the original manuscript.

Manuscripts must be in their **final form,** typed on one side of each sheet only, with double spacing and wide margins. Formulae should be typewritten whenever possible. Mimeographed copies are not acceptable unless clearly legible.

Please include a "Note for the Printer" explaining markings used. See suggestions overleaf.

**Diagrams** should be submitted on separate sheets, not included in the text. They should be drawn in Indian ink in clean and clear uniform lines, the whole about twice the size of the finished illustration. Inscriptions should allow for the figure 1, for example, to be about 2 mm high in the final version (i.e. 4 mm for reduction $\times \frac{1}{2}$). The author should mark in the margin of the manuscript where diagrams may be inserted.

**Footnotes,** other than those which refer to the title heading, should be numbered consecutively and placed at the foot of the page to which they refer (not at the end of the article).

Please give on the first page of the manuscript a **running head** (condensed title), which should not exceed 70 letters including spaces.

**References** to the literature should be listed at the end of the manuscript. The following information should be provided for **journal articles:** names and initials of all authors, full title of the paper, name of the journal, volume, first and last page numbers and year of publication. References to **books** should include name(s) of author(s), full title, edition, place of publication, publisher and year of publication.

### Examples

Bombieri, E., Giusti, E.: Harnack's inequality for elliptic differential equations on minimal surfaces. Inventiones math. **15**, 24 – 46 (1971).

Tate, J.T.: *p*-Divisible Groups. In: Proceedings of a Conference on Local Fields, pp. 158 – 183. Berlin-Heidelberg-New York: Springer 1967.

## B. Marking

### 1. Text

Words or sentences to be set in *italics* should be marked by single underlining.

The words **"Theorem"**, **"Proposition"**, **"Lemma"**, **"Corollary"** etc. are normally printed in **boldface**, followed by the formulation in italics (to be underlined in the manuscript).
The words "*Proof*", "*Remark*", "*Example*", "*Case*" etc. are printed in italics, and "Definition" in boldface with the formulation in ordinary typeface.

### 2. Formulae

Letters in formulae are normally printed in italics, figures in ordinary typeface.
It will help the printer if in doubtful cases the position of indices and exponents is marked thus: $b\,{}_{\uparrow}$, $a^{\forall}$. Spacing of indices and exponents must be specially indicated ($A_{m\,n}^{\,n\,m}$), otherwise they will be set ($A_{mn}^{nm}$).
Underlining for special alphabets and typefaces should be done according to the following code:

| | |
|---|---|
| single underlining: | small letter |
| double underlining: | capital letter |
| brown: | boldface (headings, boldface letters in formulae) |
| yellow: | upright (abbreviations e.g. Re, Im, log, sin, ord, id, lim, sup, etc.) |
| red: | Greek |
| blue: | Gothic |
| green: | Script |
| violet: | the numerals 1 and 0 (to distinguish them from the small letter *l* and the capital letter *O*) |

The following are frequently confused:

$\circ, o, O, 0$; $\cup, \mathbf{u}, \bigcup, U$; $\times, x, X, \kappa$; $\vee, v, \nu$; $\theta, \Theta, \phi, \varphi, \Phi, \varnothing$; $\psi, \Psi$; $\varepsilon, \in$;

$a', a^1$; the symbol *a* and the indefinite article a;

also the handwritten Roman letters:

$c, C$; $e, l$; $I, J$; $k, K$; $o, O$; $p, P$; $s, S$; $u, U$; $v, V$; $w, W$; $x, X$; $z, Z$;

Please take care to distinguish them in some way.

## C. Examples

### 1. Special alphabets or typefaces

| | |
|---|---|
| Script | $\mathscr{A}, \mathscr{B}, \mathscr{C}, \mathscr{D}, \mathscr{E}, \mathscr{F}, \mathscr{G}, \mathscr{H}, \mathscr{I}, \mathscr{J}, \mathscr{K}, \mathscr{L}, \mathscr{M}, \mathscr{N}, \mathscr{O}, \mathscr{P}, \mathscr{Q}, \mathscr{R}, \mathscr{S}, \mathscr{T}, \mathscr{U}, \mathscr{V}, \mathscr{W}, \mathscr{X}, \mathscr{Y}, \mathscr{Z}$<br>$a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z$ |
| Sanserif | A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z<br>a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z |
| Gothic | $\mathfrak{A}, \mathfrak{B}, \mathfrak{C}, \mathfrak{D}, \mathfrak{E}, \mathfrak{F}, \mathfrak{G}, \mathfrak{H}, \mathfrak{I}, \mathfrak{J}, \mathfrak{K}, \mathfrak{L}, \mathfrak{M}, \mathfrak{N}, \mathfrak{O}, \mathfrak{P}, \mathfrak{Q}, \mathfrak{R}, \mathfrak{S}, \mathfrak{T}, \mathfrak{U}, \mathfrak{V}, \mathfrak{W}, \mathfrak{X}, \mathfrak{Y}, \mathfrak{Z}$<br>$\mathfrak{a}, \mathfrak{b}, \mathfrak{c}, \mathfrak{d}, \mathfrak{e}, \mathfrak{f}, \mathfrak{g}, \mathfrak{h}, \mathfrak{i}, \mathfrak{j}, \mathfrak{k}, \mathfrak{l}, \mathfrak{m}, \mathfrak{n}, \mathfrak{o}, \mathfrak{p}, \mathfrak{q}, \mathfrak{r}, \mathfrak{s}, \mathfrak{t}, \mathfrak{u}, \mathfrak{v}, \mathfrak{w}, \mathfrak{x}, \mathfrak{y}, \mathfrak{z}$ |
| Boldface | **A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z**<br>**a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z** |
| Special Roman | $\mathbb{A}, \mathbb{B}, \mathbb{C}, \mathbb{D}, \mathbb{E}, \mathbb{F}, \mathbb{G}, \mathbb{H}, \mathbb{I}, \mathbb{J}, \mathbb{K}, \mathbb{L}, \mathbb{M}, \mathbb{N}, \mathbb{O}, \mathbb{P}, \mathbb{Q}, \mathbb{R}, \mathbb{S}, \mathbb{T}, \mathbb{U}, \mathbb{V}, \mathbb{W}, \mathbb{X}, \mathbb{Y}, \mathbb{Z}, \mathbb{1}$ |
| Greek | $\Gamma, \Delta, \Theta, \Lambda, \Xi, \Pi, \Sigma, \Phi, \Psi, \Omega$<br>$\alpha, \beta, \gamma, \delta, \varepsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \lambda, \mu, \nu, \xi, o, \pi, \rho, \sigma, \tau, \upsilon, \varphi, \phi, \chi, \psi, \omega$ |

### 2. Notations

| preferred form | instead of |
|---|---|
| $A^*, \tilde{b}, \gamma', \mathfrak{v}, \mathbf{v}$ | $\bar{A}, \hat{b}, \bar{\gamma}, \vec{v}$ |
| lim sup, lim inf | $\overline{\lim}, \underline{\lim}$ |
| inj lim, proj lim | $\varinjlim, \varprojlim$ |
| $f\colon A \to B$ | $A \xrightarrow{f} B$ |
| $f^{-1}$ | $\overset{-1}{f}$ |

| preferred form | instead of |
|---|---|
| $\exp(-(x^2+y^2)/a^2)$ | $e^{-\frac{x^2+y^2}{a^2}}$ |
| $\dfrac{\cos(1/x)}{(a+b/x)^{1/2}}$ | $\dfrac{\cos\dfrac{1}{x}}{\sqrt{a+\dfrac{b}{x}}}$ |

# NEW BOOKS IN MATHEMATICS

**Ergebnisse der Mathematik und ihrer Grenzgebiete**

**Band 21: M. M. Day, Normed Linear Spaces.** 3rd edition
VIII, 211 pages. 1973
Cloth DM 42,–; US $16.20
ISBN 3-540-06148-7

**Band 75: T. A. Springer, Jordan Algebras and Algebraic Groups**
VII, 169 pages. 1973
Cloth DM 48,–; US $18.50
ISBN 3-540-06104-5

**Band 76: B. A. F. Wehrfritz, Infinite Linear Groups**
An Account of the Group-theoretic Properties of Infinite Groups of Matrices
XIV, 229 pages. 1973
Cloth DM 59,–; US $22.80
ISBN 3-540-06132-0

**Band 77: H. Radjavi, P. Rosenthal, Invariant Subspaces**
3 figures. XI, 219 pages. 1973
Cloth DM 50,–; US $19.30
ISBN 3-540-06217-3

**Band 78: J. Bognar, Indefinite Inner Product Spaces.** Approx. 236 pages
1974. Cloth DM 48,–; US $18.50
ISBN 3-540-06202-5

**Band 79: A. V. Skorohod, Integration in Hilbert Space**
Translator: K. Wickwire
Approx. 190 pages. 1974
Cloth DM 48,–; US $18.50
ISBN 3-540-06322-6

**Band 80: F. F. Bonsall, J. Duncan, Complete Normed Algebras**
X, 301 pages. 1973
Cloth DM 68,–; US $26.20
ISBN 3-540-06366-2

**Band 81: J. N. Crossley, A. Nerode, Combinatorial Functors**
1 figure. VIII, 146 pages. 1974
Cloth DM 36,–; US $13.90
ISBN 3-540-06428-1

**K. O. Friedrichs, Spectral Theory of Operators in Hilbert Space**
IX, 244 pages. 1973 (Applied Mathematical Sciences, Vol. 9)
Cloth DM 14,50; US $5.60
ISBN 3-540-90076-4

**Graduate Texts in Mathematics**

**Vol. 6: D. R. Hughes, F. C. Piper, Projective Planes**
11 figures. XI, 291 pages. 1973
DM 36,50; US $14.10
ISBN 3-540-90044-6

**Vol. 7: J.-P. Serre, A Course in Arithmetic**
3 figures. IX, 115 pages. 1973
DM 21,10; US $8.10
ISBN 3-540-90041-1

**Vol. 11: J. B. Conway, Functions of One Complex Variable**
32 figures. XIII, 313 pages. 1973
DM 41,10; US $15.80
ISBN 3-540-90062-4

**Vol. 12: R. Beals, Advanced Mathematical Analysis**
Periodic Functions and Distributions, Complex Analysis, Laplace Transform and Applications.
XI, 230 pages. 1973
Cloth DM 21,10; US $8.10
ISBN 3-540-90066-7

**Die Grundlehren der mathematischen Wissenschaften**

**Band 102: F. Nevanlinna, R. Nevanlinna, Absolute Analysis**
Translator: P. Ehmig
5 figures. XIII, 272 pages. 1973
Cloth DM 88,–; US $33.90
ISBN 3-540-05917-2

**Band 117: O'Meara, Introduction to Quadratic Forms**
3rd Corrected Printing
10 figures. XI, 342 pages. 1973
Cloth DM 68,–; US $26.20
ISBN 3-540-02984-2

**Band 126: O. Lehto, K. I. Virtanen, Quasiconformal Mappings in the Plane**
Translator: K. W. Lucas. 2nd edition
15 figures. VIII, 258 pages. 1973
Cloth DM 67,50; US $26.00
ISBN 3-540-06093-6

**Band 144: A. Weil, Basic Number Theory.** 2nd edition. XVIII, 315 pages
1973. Cloth DM 48,–; US $18.50
ISBN 3-540-06177-0

**Band 190: C. Faith, Algebra: Rings, Modules and Categories I**
XXIII, 565 pages. 1973
Cloth DM 54,–; US $20.80
ISBN 3-540-05551-7

**Band 198: S. A. Gaal, Linear Analysis and Representation Theory**
IX, 688 pages. 1973
Cloth DM 124,–; US $47.80
ISBN 3-540-06195-9

**Band 204: V. M. Popov, Hyperstability of Control Systems**
Translator: R. Georgescu
8 figures. 400 pages. 1973
Cloth DM 68,–; US $26.20
ISBN 3-540-06373-0
Distribution rights for the Socialist Countries except GDR: I.C.E. Libri, Bucaresti, Romania

**K. H. Hofmann, P. S. Mostert: Cohomology Theories for Compact Abelian Groups**
With an Appendix by E. C. Nummela
Approx. 234 pages. 1974
Cloth DM 45,–; US $17.40
ISBN 3-540-05730-7
Distribution rights for the Socialist Countries: VEB Deutscher Verlag der Wissenschaften, Berlin, DDR

**F. Oberhettinger, L. Badii: Tables of Laplace Transforms**
VII, 428 pages. 1973
DM 39,–; US $15.10
ISBN 3-540-06350-1

**Springer Tracts in Natural Philosophy**

**Vol. 23: H. J. Stetter, Analysis of Discretization Methods for Ordinary Differential Equations**
12 figures. XVI, 388 pages. 1973
Cloth DM 120,–; US $46.20
ISBN 3-540-06008-1

**Vol. 24: W. Strieder, R. Aris, Variational Methods Applied to Problems of Diffusion and Reaction**
12 figures. IX, 109 pages. 1973
Cloth DM 36,–; US $13.90
ISBN 3-540-06311-0

Prices are subject to change without notice

**Springer-Verlag**
**Berlin**
**Heidelberg**
**New York**

1/74

# Mathematische Zeitschrift

Band 135 · (Schluß-)Heft 4 · 1974

Inhalt


| | | |
|---|---|---|
| J. A. Jenkins | On a Problem Concerning Harmonic Measure | 279 |
| W. Hackenbroch | Eindeutigkeit des Darstellungsraumes von Vektorverbänden | 285 |
| A. Grütter | Wesentliche Selbstadjungiertheit eines Schrödinger-Operators | 289 |
| M. Wolff | Über das Randspektrum komplexer ordnungsbeschränkter Operatoren in Banachverbänden | 293 |
| R. M. Wilson | Nonisomorphic Steiner Triple Systems | 303 |
| R. P. Held, D. K. Sjerve | On the Homotopy Properties of Thom Complexes | 315 |
| H. Abels | Specker-Kompaktifizierungen von lokal kompakten topologischen Gruppen | 325 |
| W. F. Reynolds | Fields Related to Brauer Characters | 363 |


Indexed in Current Contents

Responsible for advertisements: L. Siegel, D-1000 Berlin 15, Kurfürstendamm 237
Telephone: (0 30) 8 82 10 31, Telex 01-85 411
Springer-Verlag: Berlin · Heidelberg · New York
Printers: Universitätsdruckerei H. Stürtz AG, Würzburg
Printed in Germany
© by Springer-Verlag · Heidelberg 1974